

WE CLAIM:

- 1 1. A magnetic transducer device comprising:
2 a bottom magnetic pole;
3 a nonmagnetic gap layer deposited over said bottom magnetic pole;
4 a top magnetic pole deposited over the nonmagnetic gap layer, the top
5 magnetic pole having an upper portion and a lower portion wherein the lower
6 portion of the top magnetic pole faces a surface of the bottom magnetic pole and
7 wherein the lower portion has a middle section that is separated from the bottom
8 pole by the nonmagnetic gap layer by a first distance and the lower portion has
9 end portions located at each end of the middle portion that are separated from
10 the bottom pole by the nonmagnetic gap layer by a second distance wherein the
11 second distance is greater than 25% of the first distance.
- 1 2. The device of claim 1 wherein the second distance is at least 40% of the
2 first distance.
- 1 3. The device of claim 1 wherein the second distance is at least 50% of the
2 first distance.
- 1 4. The device of claim 1 wherein the second distance is at least 60% of the
2 first distance.
- 1 5. The device of claim 1 wherein the second distance ranges from about
2 greater than 25% to about 60% of the first distance.
- 1 6. The device of claim 1 wherein the device has a width (TPWG) measured
2 between a left and a right side of the top magnetic pole wherein the width ranges from
3 about 0.3 microns to about 1.5 microns.
- 1 7. The device of claim 6 wherein the width ranges from about 0.3 microns
2 to about 0.5 microns.

1 8. The device of claim 6 wherein the first distance is about 30% of the
2 width of the device.

1 9. The device of claim 1 wherein the first distance ranges from about 0.1
2 microns to about 0.3 microns.

1 10. The device of claim 1 wherein the first distance ranges from about 0.1
2 microns to about 0.15 microns.

1 11. The device of claim 1 wherein the end portions each have a surface that
2 is substantially parallel with the surface of the bottom magnetic pole.

1 12. The device of claim 1 wherein the end portions are square in shape.

1 13. The device of claim 1 wherein the end portions are wedged in shape.

1 14. The device of claim 1 wherein the end portions have a surface that faces
2 the surface of the bottom magnetic pole wherein the surface of the end portions are
3 angled so that at one end of the end portion the distance between the end portion and the
4 bottom magnetic pole is greater than at an opposite end of the end portion.

1 15. The device of claim 14 wherein the distance is greatest between the end
2 portions and the bottom magnetic pole at the end portion closest to the middle portion of
3 the top magnetic pole.

1 16. The device of claim 1 wherein each end portion of the top magnetic pole
2 is defined by a segment connecting two points.

1 17. The device of claim 16 wherein the segment is linear.

1 18. The device of claim 16 wherein the segment is curvilinear.

2 bottom magnetic pole.

2 the bottom magnetic pole.

4 shared pole at each end of the magnetic region.

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